

What is claimed is:

1. A combined radio frequency electrical current and coolant fluid coupling, comprising:

a fitting body having a fitting body longitudinal axis, having a fitting body mating face generally perpendicular to said longitudinal axis of said fitting body, having a fitting body through hole generally concentric with said fitting body longitudinal axis, and having an external provision for mating;

a sleeve having a sleeve longitudinal axis, having a first sleeve mating face perpendicular to said sleeve longitudinal axis and proximal to said fitting body mating face, having a second sleeve mating face perpendicular to said sleeve longitudinal axis and distal to said first fitting body mating face, and having a sleeve through hole generally concentric with said sleeve longitudinal axis; and

a nut having a nut longitudinal axis, having an internal nut face perpendicular to said nut longitudinal axis and proximal to said second sleeve mating face when assembled, having a nut through hole generally concentric with said nut longitudinal axis, and having an internal provision for mating compatible with said external provision for mating of said fitting body.

2. The coupling fitting of claim 1, further comprising a concentric facial groove in said first sleeve mating face, of such diameter and depth as to accept an o-ring as a sealing member.

3. The coupling fitting of claim 2, further comprising an o-ring seated

in said concentric facial groove.

4. The coupling fitting of claim 1, further comprising a first conduit of such size as to fit in said fitting body through hole.

5. The coupling fitting of claim 1, further comprising a second conduit of such size as to fit in said sleeve through hole.

6. The coupling fitting of claim 1, further comprising a first parallel pair of flats, integral with said fitting body, generally equidistant from said longitudinal axis of said fitting body, of such dimensions as to permit application of the torque required to urge said coupling fitting into final assembly.

7. The coupling fitting of claim 6, further comprising a first multiplicity of parallel pairs of flats, integral with said fitting body, generally equidistant from said longitudinal axis of said fitting body, of such dimensions as to permit application of the torque required to urge said coupling fitting into final assembly.

8. The coupling fitting of claim 1, further comprising a first torque application shape, integral with said fitting body, of such dimensions as to permit application of the torque required to urge said coupling fitting elements into final assembly.

9. The coupling fitting of claim 1, further comprising a first torque

application shape, affixed to said fitting body, of such dimensions as to permit application of the torque required to urge said coupling fitting into final assembly.

10. The coupling fitting of claim 1, further comprising a second parallel pair of flats, integral with said nut, generally equidistant from said longitudinal axis of said nut, of such dimensions as to permit application of the torque required to urge said coupling fitting into final assembly.

11. The coupling fitting of claim 11, further comprising a second multiplicity of parallel pairs of flats, integral with said nut, generally equidistant from said longitudinal axis of said nut, of such dimensions as to permit application of the torque required to urge said coupling fitting into final assembly.

12. The coupling fitting of claim 11, further comprising a second torque application shape, integral with said nut, of such dimensions as to permit application of the torque required to urge said coupling fitting into final assembly.

13. The coupling fitting of claim 11, further comprising a second torque application shape, affixed to said nut, of such dimensions as to permit application of the torque required to urge said coupling fitting into final assembly.

14. The coupling fitting of claim 1, wherein the material comprising said fitting body and said sleeve is brass.

15. The coupling fitting of claim 1, wherein the material comprising

said first conduit and said second conduit is copper.

16. The coupling fitting of claim 1, wherein the materials comprising said fitting body and said sleeve are compatible with attachment to said first conduit and said second conduit, respectively, by soldering.

17. The coupling fitting of claim 1, wherein the materials comprising said fitting body and said sleeve are compatible with attachment to said first conduit and said second conduit, respectively, by brazing.

18. The coupling fitting of claim 1, wherein the materials comprising said fitting body and said sleeve are compatible with attachment to said first conduit and said second conduit, respectively, by welding.

19. The coupling fitting of claim 1, wherein the materials comprising said fitting body and said sleeve are compatible with attachment to said first conduit and said second conduit, respectively, using a conductive adhesive.

20. The coupling fitting of claim 1, wherein electrical connectivity between said fitting body and said sleeve is established by direct pressure between said fitting body and said sleeve.

21. The coupling fitting of claim 1, wherein said fitting body and said first conduit are electroconductively and mechanically bonded and said sleeve and said second conduit are electroconductively and mechanically bonded.

22. The coupling fitting of claim 1, wherein a fluid seal between said fitting body and said sleeve is established by the seal established by direct pressure between said fitting body, said o-ring, and said sleeve.

23. The coupling fitting of claim 1, further comprising a radial groove in said sleeve, of such diameter and depth as to accept an o-ring as a seal.

24. The coupling fitting of claim 1, further comprising a coaxial surface within said fitting body, of such position, diameter, and extent as to establish a seal with an o-ring situated in a radial o-ring groove in said sleeve.

25. An apparatus and method for coupling fluid-filled conductors, comprising:

means for assembling and disassembling a fluid-filled coupling fitting first half and a fluid-filled coupling fitting second half by means of mating continuous helical screw threads;

means for establishing a low electrical resistance across a coupling interface between fluid-filled electrical conductors through the use of a normal force between mating surfaces of a fluid-filled coupling fitting first half and a fluid-filled coupling fitting second half; and

means for sealing a fluid coupling interface against fluid leakage with a gasket affixed to a fluid-filled coupling interface first half and surrounding the fluid coupling interface, where the gasket is urged against a mating surface surrounding a fluid passage in a fluid-filled coupling fitting second half.

26. The coupling fitting of claim 25, further comprising means for applying coupling torque directly to the coupling fitting first and second halves.

27. A method for coupling fluid-filled conductors, comprising the steps of:

securing a first coupling fitting half to a first conduit;

securing a second coupling fitting half to a second conduit;

placing an o-ring type gasket into a fitted groove in the first coupling fitting half;

assembling the first and second coupling fitting halves;

urging the first and second coupling fitting halves together to establish a joint with low electrical resistance and low fluid leakage.